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# **Modernizing Consumer Financial Regulation For the Digital Age**

**Jo Ann Barefoot**

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**MODERNIZING CONSUMER FINANCIAL REGULATION  
FOR THE DIGITAL AGE**

*Final paper in a series of six*

*Note: This is the last in a series of papers arguing that traditional analog regulation that aims to promote consumer financial protection and inclusion has largely failed and should be redesigned to leverage new digital technology that can make both finance and financial regulation better and less costly. For the previous papers in the series, see [here](#).*

“Transforming” financial regulation for the digital age will be extremely difficult. Policymakers are at risk both of inadvertently choking off desirable fintech and of failing to prevent news harms it may bring. Traditional approaches are likely to create piecemeal legislation and regulation that addresses narrow problems without recognizing unintended ramifications for the larger system. There is also risk that incumbent industries experiencing disruption will exert political pressure to block innovation and will sway policymakers who do not fully understand fast-emerging issues.

Beyond this, as discussed throughout this series, regulatory agencies will be hard-pressed to keep up with change and to coordinate with each other when the impacts of their actions overlap. It is also likely that regulatory gaps will arise where no agency has jurisdiction, leaving the system open both to emerging risk and to growing uncertainty that chills innovation. This may include the difficulty of regulating a proliferating number of small innovators. Those innovators, in turn, will have trouble navigating regulatory structures and requirements. Some capital will avoid finance due to these kinds of concerns.

*As discussed previously, the obstacles are not technological – for the most part, the needed technologies not only exist but are working in mature forms in other sectors. Rather, the obstacles are human. Cultural, structural, legal, political and practical factors will converge to work against major shifts in a world that is, again, designed by intent to be resistant to rapid change.*

Nevertheless, the Regulation Innovation series of papers has laid out the case for why the system must change anyway. The reasons fall into two main categories:

First, new technology, if regulated well, could solve intractable problems that have persisted for decades, and even centuries, in finance. For financial customers, as discussed in Papers 2 and 3, technology can make financial services vastly more fair and inclusive. It can also push back the onslaught of global financial crime, reversing or at least cutting sharply the current 99 percent failure rate. And for financial regulation, as explored in Paper 4, it can end the need to choose between higher effectiveness and lower costs, and instead deliver both at once.

Second, and most urgently, today's exponential explosion of information and technology will render regulators unable to oversee the financial system successfully, unless they get new tools.

Exponential technology change has already begun to overwhelm the capacity of linear human thinking and institutions,<sup>1</sup> and few areas are slower to adapt than regulatory processes that are -- for good reason -- designed to be deliberative, careful and therefore necessarily slow. Today's regulatory agencies are filled with talented and dedicated people, but they operate in systems that are not well-matched to the need to absorb massive change, rapidly, without making mistakes.

Regulatory bodies are geared to preventing risk, not capturing opportunity. The bank regulators, moreover, are structured to address a discrete industry, not a decentralized and fast-spreading marketplace. Unless proactive strategies are adopted, the regulatory system will unintentionally block the emergence of transformative pro-consumer change. It may also fail to protect people from new harms, due to limitations created by legacy missions, powers, skills, and adaptability that no longer fit emerging needs.

This final paper in the series will survey the major obstacles to modernization and will suggest both principles and practical strategies for overcoming them. Some of these barriers overlap the new technology risks that were explored in Paper 5, but are nevertheless distinct from them.

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<sup>1</sup> Niv Dror, "When Exponential Technology Progress Becomes Our Reality," <https://medium.com/@nivo0o0/when-exponential-technological-progress-becomes-our-reality-74acafd65e26#.ql5btvvr>

The recommendations may overlap some of the regtech solutions described in paper 4, but this section is meant to focus more broadly on strategies for taking action and achieving transformation.

### **Obstacles to Change**

#### **Structural complexity:**

As explained in Paper 1 in the Regulation Innovation series, the complexity of the U.S. financial regulatory structure is unique in the world. There are five separate federal regulatory agencies that directly supervise financial institutions, and about two dozen more that address consumer financial products in other ways, as well as fifty states that have their own regulatory bodies. Many large and small U.S. companies are also subject to international laws and rules. Meanwhile Congress, state legislatures, and courts produce new laws and rulings that sometimes conflict with others and create unclear and inconsistent mandates, unresolved regulatory overlap, and also gaps where little or no regulation exists at all.

All of this will make major change highly challenging.

#### **Legal complexity:**

Even where regulators perform ideally, they operate within a statutory framework that is complex and sometimes antiquated. Laws have been stacked upon laws. In the U.S., multiple congressional committees have jurisdiction over financial topics and agencies. Overlying all of these difficulties are political ones. Major change to any aspect of the current system tends to alarm participants across the financial landscape. Consumer advocates fear dilution of important public protections. Industry fears that promised simplifications might not materialize, and/or that the merits of change might not outweigh the costs of transitioning any major aspect of today's regulatory compliance systems and procedures to a new set of requirements.

#### **Rising uncertainty:**

Another key obstacle to reform is rising regulatory uncertainty. As regulators fall behind the innovation curve, providers will increasingly be forced to guess at how new issues will be viewed if and

when government catches up. This challenge will be daunting for an industry whose compliance mechanisms have been designed mainly to implement detailed prescriptive rules, using only limited discretionary judgment. The adverse impacts will range from chilling desirable financial offerings to enabling harmful practices to take root, making it difficult and potentially even impossible to eliminate them later.

In particular, uncertainty is likely to deter and delay adoption of fintech and regtech tools and strategies by banks, which will fear disapproval from their examiners even if it is not explicitly expressed.

### **Regulatory “capture:”**

Many financial industry participants worry that fintech innovation threatens incumbent businesses, including banks, which tend to be more highly regulated and therefore less nimble in adopting new technology. Almost uniquely in our economy, banks undergo special regulation to safeguard “safety and soundness” both of individual institutions (and their FDIC-insured deposits) and of the financial system overall. As banks and other financial industries experience technology-driven disruption, they and their regulators will confront uncomfortable evolution and in some cases potential extinction. Many of these parties are likely to seek legislative and regulatory protection from new competition based on a mix of self-interest and perception of how best to serve the public interest.

### **Vendor “capture:”**

As discussed in Paper 5, a similar phenomenon may also affect major vendors that provide technology to the financial services industry. In areas like core IT processing, reliance on vendors is highly concentrated in a few firms.<sup>2</sup> If the system shifts to more interoperability and modularity, results may include disruption of some companies’ business models as well as daunting transition challenges for entities, especially community banks, that are currently set up on these legacy systems.

### **Legal and procedural barriers to innovation by regulators:**

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<sup>2</sup> <https://www.bobsguide.com/guide/news/2019/Jan/29/report-cloud-based-core-banking-vendors-look-to-smash-legacy-oligopoly/>

If the pace of technology change is a top threat to effective regulation, it follows that regulatory processes must accelerate. Perhaps less obviously, regulatory acceleration requires two elements that are currently in short supply. One is the need for more robust “collaboration” -- easier ways to engage in informal discussion and brainstorming with outside parties across the spectrum of technology, financial industry, advocates, and academics. The second is the need for agencies to conduct experimentation.

In January 2020, the Alliance for Innovative Regulation (of which I am CEO) released a report<sup>3</sup> prepared on a *pro bono* basis by the Buckley law firm on legal impediments to agency innovation. The firm interviewed people at a range of agencies who are involved in innovation initiatives (all the U.S. federal financial regulators have these kinds of programs underway). These officials identified a range of government procedural mandates that impede either collaboration or experimentation or both. The report describes the issues involved and recommends potential courses of action.

Some of the rules and protocols raised in these interviews are described below. It is important to note that they all were put in place to pursue important goals that must be preserved, but that may bear updating for the digital age.

The Administrative Procedures Act<sup>4</sup> produces lengthy, linear rulemaking processes that can take years from start to finish. A major regulatory change may involve an early “Request for Information,” or RFI; followed by an ANPR, or Advance Notice of Proposed Rulemaking; followed by empaneling a SBREFA (Small Business Regulatory Enforcement Fairness Act)<sup>5</sup> proceeding, which engages a group of small businesses to evaluate potential regulatory burdens (ironically contributing to government slowness that is hobbling small innovators trying to enter finance); followed by a Notice of Proposed Rulemaking; followed by a final rule; and often then followed by further regulatory refinements and non-rule guidance.

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<sup>3</sup> <https://www.regulationinnovation.org/report>

<sup>4</sup> 5 U.S. Code Chapter 5 - ADMINISTRATIVE PROCEDURE

<https://www.google.com/url?sa=t&rct=j&q=&escr=s&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwid5ebMklnWAhVGRiYKHylC4oQFgg2MAM&url=https%3A%2F%2Fwww.law.cornell.edu%2Fuscode%2Ftext%2F5%2Fpart-1%2Fchapter-5&usg=AFQjCNGTOBOjEHZDfxmqNzlw1WSbU2vOw>

<sup>5</sup> <https://www.sba.gov/advocacy/small-business-regulatory-enforcement-fairness-act-sbrefa>

As noted earlier, in today's high-tech marketplace, this multi-year process will increasingly produce rules that are obsolete on arrival.

The duration of this process is not the only problem. Equally difficult is that, during active rulemaking, regulators are limited in their ability to talk with experts and affected parties. Regulators sometimes hold public hearings to take testimony, which typically involves a limited opportunity for questions and answers. Beyond that, each step in the process advances largely through the writing and reading of letters of comment, which are publicly posted and are analyzed by the agency's lawyers and policymakers. During a pending rulemaking process, agency personnel are barred from speaking informally about the issues involved, under rules requiring that such "ex parte" discussions be placed in the public record. Again, there are good reasons to guard against inappropriate conversations and undue influence, but the result of these kinds of rules is that in many situations, policymakers can barely talk with anyone but each other, as they grapple with very novel issues which, especially with regard to new technology, they may not deeply understand.

Similarly, the Federal Advisory Committee Act, or FACA,<sup>6</sup> limits regulators' ability to meet and talk readily with industry and other parties. Some agencies also have ethics rules that prevent or impede participation in meetings where a meal is served. The Government in the Sunshine Act<sup>7</sup> is another mandate that provides (with exceptions) that "every portion of every meeting of an agency shall be open to public observation," establishing requirements for advance public notice and openness to public attendance. This can make it difficult for regulators to discuss emerging issues with affected groups.

The Anti-Deficiency Act,<sup>8</sup> meanwhile, impedes agencies from accepting donated services that could help regulators conduct testing that could accelerate their learning. An official interviewed for the Buckley report noted that his agency hesitates to invite briefings from experts such as university

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<sup>6</sup> FACA <https://www.gsa.gov/portal/content/104514>

<sup>7</sup> Government in the Sunshine Act <https://www.gsa.gov/portal/content/102416>

<sup>8</sup> Anti-deficiency Act <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=13&cad=rja&uact=8&ved=0ahUKewiyme2>

professors, if these parties typically would charge a fee to deliver a lecture or consultation on the topic. The briefing, without the charge of an honorarium, might be construed as an illegal “gift.”

Some agencies reported that the interplay among government rules has prevented them from being able to conduct pilot testing of regtech technology. Under the Anti-Deficiency Act, they could not accept offers to try it for free.<sup>9</sup> Under their procurement rules, however, they also could not purchase it. Standard federal technology procurement protocols require competitive bidding processes designed to guide selection of major IT. These are not worth undertaking when the goal is to purchase only enough of something to run a small pilot test.

### **Criteria for Reform**

Before turning to recommendations, it is useful to discuss the criteria that should guide development of a digitally-native regtech system.

#### **Consumer centrism and holistic scope:**

Today’s regulatory system is broadly organized in two ways – it is either industry-centric (as with having unique regulation of banks) or it is product centric, focused on specific financial offerings like mortgage loans or securities (many of which are offered by both banks and nonbanks). While this approach will continue, the policy dialogue should explicitly encompass a focus on consumer-centric behaviors, options, and outcomes in any area involving consumer finance. The CFPB already has extensive jurisdiction to take this approach, but covers only a fraction of the industry.

#### **Regulatory consistency:**

Regulators with overlapping jurisdictions need to become highly adept at treating similar issues in a similar manner. Inconsistency creates unfair treatment of different providers and their customers, and also generates “regulatory arbitrage” in which providers seek oversight by regulators perceived to be less

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<sup>9</sup> The Anti-Deficiency Act applies to some but not all federal financial regulatory bodies.

stringent. (The late Senator William Proxmire, D-WI, Chairman of the Senate Banking Committee, termed this phenomenon “competition in laxity.” Today it’s often called “regulatory arbitrage.”<sup>10</sup>)

### **Collaboration:**

Regulators should greatly expand interagency collaboration and also dialogue with outside parties in finance, technology, academia, and consumer advocacy. Robust collaboration is necessary for rapid learning amidst technology change. In general, more meetings should occur that have policymakers and software experts in the same room.

### **Regulatory clarity and predictability:**

There is a school of thought, especially among enforcement agencies, that *un*predictability is desirable because it discourages businesses from testing the boundaries of what regulators or courts will allow, and thereby deters temptation to offer harmful products. While there is truth to this, it is outweighed by the greater problem that businesses generally avoid markets where the regulatory risks are both high and unpredictable. Especially regarding financial inclusion, it will not be possible to increase access without clarifying the rules of the road in areas that involve subjective enforcement standards, such as nondiscrimination and avoidance of “unfair” practices.

### **Principles-based regulation combined with empirical standards and outcomes-based metrics:**

Unless and until government starts issuing new rules in the form of code, regulatory strategy in the U.S. should deemphasize rules-based strategies and concentrate on principles-based approaches, married up with measurable standards. Rules-based regulation cannot keep up with marketplace innovation, and implementation costs of proliferating new rules are unsustainable. Following the lead of other countries, the U.S. should shift more to principles-driven strategies, but should also establish quantitative metrics in a regtech framework that can address the main problems with a principles focus – namely that standards are subjective, which leaves industry uncertain about how to comply. Developing

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<sup>10</sup> [https://link.springer.com/chapter/10.1007/978-3-319-54891-3\\_5](https://link.springer.com/chapter/10.1007/978-3-319-54891-3_5)

and sticking to quantitative standards that, if met, satisfy the principles, will be difficult but worth the effort, paying off in better system performance and lower costs.

These empirical standards will evolve over time, but regulators should refrain from changing them retroactively and punishing past actions in ways that essentially move the goalposts. These metrics need to function as a safe harbor, enabling financial companies to demonstrate simple, straightforward compliance in areas appropriate for this approach.

These empirical standards can lay the groundwork for shifting some aspects of regulation to an outcomes-based design, focused on actually achieving the policy goals that underlie legal and regulatory requirements, as opposed to conducting “compliance” activities that may not do so.

**Resolving the tension between protection and inclusion:**

These two goals often work against each other, because, as discussed in Paper 2, excessively high protection standards dissuade providers from trying to serve people, especially in vulnerable segments. It’s a fallacy to think that today’s levels of products and markets are fixed and can be regulated more stringently without reducing the supply of services (and thereby, often, pushing prices upward). A particular problem arises when consumer protection standards are subjective and unclear, as noted above under uncertainty. Some vulnerable consumers do present higher risks, as measured by factors like past defaults. If regulators protect them from, for example, higher prices, companies will not serve them because the revenue will not cover the risk. Obviously protection measures are critical, but they should be crafted to address potential tradeoffs between protection and access – without allowing either predatory pricing or lending to people who lack ability to repay.

**Regulatory simplicity and ease:**

Policy should strive to minimize regulatory compliance costs, which are passed along to consumers, deter innovation and competition in the financial field, and discourage providers from serving less-profitable markets.

**Adequate regulatory reach:**

Regtech should be used to detect and address harmful, fraudulent or incompetent activities by small innovators<sup>11</sup> that may, in essence, fly beneath traditional regulatory radar. Today, an unlicensed, unregulated individual can create a financial app that can reach millions of people. Some small innovators will create financial tools and advice without even knowing that regulations exist, much less how to comply. Meanwhile financial activities are increasingly transacting on blockchains through cryptocurrency, often outside the scope of regulated channels. Today's regulatory mechanisms are designed for a much more centralized, concentrated, bank-centric marketplace. Regulators will have to decide how and how much to address new, small experimentation and how to avoid choking off desirable ideas. Big data-based market monitoring will be one solution.

**Fostering of competition and profitability:**

Regulators should avoid protecting legacy industries from innovative competitors that could improve consumers' options. This applies both to competitors with financial companies and competitors with incumbent industry vendors.

**Blocking of deception and provider-driven harm:**

This will continue to be one of the most critical roles of regulation, and these risks will escalate with rapid and confusing technology change, even as consumer options are improving.

**Alignment with market forces:**

Better solutions for consumers will not be sustainably widespread unless they are profitable, regardless of regulatory pressure. Much of the opportunity to improve consumer finance is arising because technology is making formerly unprofitable activities into profitable ones. This should be leveraged.

**Alignment with behavioral reality:**

Policy should be designed to recognize that some challenges are intrinsic to financial regulatory systems. Consumers will make mistakes. Businesses will often profit from them. Businesses will

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<sup>11</sup> Some parties advocate for affirmatively exempting very small innovators from regulation. However, if they can harm consumers, it seems likely that regulators will want to oversee them.

emphasize product benefits and downplay flaws. Regulated entities will seek protection. Legislators will respond to public concern. Policymakers should not pretend that any of these natural dynamics can be substantially or permanently overcome by strengthening the hand of one party against the others. Such shifts can bring marginal (and usually temporary) progress, but this is often offset by unintended consequences as players re-channel the same immutable tendencies in new directions. As discussed in Paper 1, fixing consumer mistakes through education has not worked. Fixing business behavior by tightening and escalating regulation works only partially, and produces a permanent race between regulators and industry that government never fully wins. Regulatory reform should therefore leverage technology in ways that make processes as low-cost and effortless as possible, for both sides.

**Data-centrism:**

Digital regulatory systems will need to be data-centric. They will require adequate amounts of data, high quality data, and capacity to analyze information.

**Security:**

A new-generation regulatory system must design for high security and protection against both cybercrime and loss of privacy. It should focus on empowering consumers to protect and control their data.

**Interoperability and modularity:**

Regulatory systems should evolve to be interoperable and modular. This is essential for curtailing the costs of the system and for assuring that innovation can advance continuously, rather than in spurts characterized by introduction of new technologies that become, themselves, rigid and outdated again over time.

**Agility:**

Regulators will have to become adept at keeping up with the speed of technology change. The technology sector has pioneered the concept of “agile” workflow that involves intense, cross-disciplinary collaboration and rapid development of solutions, in contrast to linear, sequential processes of design and

decision-making. Regulators will have to become agile -- adept at rapid learning, testing of innovation, rapid course correction, and creation of regulatory tools that can be updated and improved continuously.

### **Recommendations – Practical Pathways for Change**

The first five papers in the Regulation Innovation series laid out the failures, costs and limitations of traditional regulatory efforts to advance consumer financial inclusion and financial health and explored the potential for new technology to produce better results. This final paper has surveyed the daunting obstacles to modernizing the system and criteria that should be applied in designing a new one.

The section below outlines actionable recommendations for regulators and policymakers.

#### **Recommendation 1: Adopt a strategy of “tech activism”**

Paper 4 cited the 2019 anti-money laundering report issued by Protiviti and the International Regtech Association entitled, “An Urgent Call for KYC Optimization.”<sup>12</sup> Use of the word “urgent” in its title reflects rising global recognition that traditional regulatory methods cannot keep pace with changing technology. The report says:

*Regulators should foster a culture of tech activism rather than one that is tech-agnostic. Tech activism requires regulators to be actively technology-informed, and to develop views on specific technologies without endorsing actual vendors.*

This shift is critical. As the authors note, regulators should not endorse individual technology vendors. However, they must proactively foster industry-wide and government-wide adoption of better technology in finance and especially in financial regulation. They will have to be active, rather than passive, players in moving the system forward. They should embrace this effort with urgency.

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<sup>12</sup> <https://www.protiviti.com/US-en/insights/urgent-call-kyc-optimization-protiviti-study>

This strategy must be deeply embraced by both political and career leaders of the financial regulatory agencies and must permeate everything each entity does. While there is an important place for innovation programs that are somewhat walled off from the organization to give them growing room, there is a concomitant need to infuse innovation into every aspect of agency activity. The last set of recommendations in this paper focuses on the culture shifts that will have to occur to enable this transformation.

A helpful mantra for this effort will be, “*think big but start small.*” The regulatory system is too complex to be overhauled in one or several major reforms at scale – even if there was consensus on how to do so, which there is not. Instead, regulators should embrace strategies of selecting concrete, practical problems to solve, as a learning experience and to begin to seed the system with new technologies. These concrete efforts should nest into a wider vision of how a future digitally-native system will be designed.

**Recommendation 2: Establish an interagency innovation task force**

Conversion to a modernized regulatory system will require high levels of interagency coordination and cooperation. Since the formal structure of the U.S. regulatory system is unlikely to change in the foreseeable future, this means the agencies must find new ways to connect and work together. There will be need for an interagency entity to help regulators identify priority areas that call for their joint effort; to cross-pollinate their learning in order to share and accelerate it; and to begin to work toward standards and protocols that will enable interoperability.

An innovation body might be set up within an existing interagency organization, such as the Federal Financial Institutions Examinations Council (FFIEC) or the Financial Stability Oversight Council (FSOC). Alternatively, it could be established as a working task force – perhaps even informally -- with the potential to be further formalized after it begins to take shape. A new entity might find it easier to adopt a “from scratch” approach, while an existing one would bring built-in advantages of infrastructure, organization and resources.

The interagency task force should supplement the innovation initiatives of the individual agencies. It can help them recognize situations where some or all of the members are working on the

same problems and should coordinate or learn from each other. It could also be valuable to set up a personnel exchange through the task force, in which agency innovation staff would be seconded to other agencies to cross-pollinate knowledge and solutions.

As discussed further below, the scope of interagency coordination should include a focus on regtech for regulators – “suptech” – in addition to work on regulatory approaches to overseeing fintech innovation. In most agencies today, these functions are separate.

### **Recommendation 3: Adopt collaborative operating models and agile workflow**

The agencies should embrace a default stance that projects and meetings should almost always involve getting a cross-section of people “in the room,” especially including technology experts.

*Collaboration.* Collaboration is one of the two secrets to accelerating innovation (the other is experimentation, discussed below). Bringing together regulatory and technology expertise is at the heart of regtech and should become the norm.

Collaboration should also be increased across agencies, over and above the innovation task force recommended above. Agency officials sometimes hesitate to take on interagency efforts because doing so is inherently slow and complicated. It is difficult enough to change a single organization, without trying to get others to change as well. Nevertheless, the current fragmented structure and change models will become an increasingly severe impediment to success in the digital age.

The agencies involved with countering financial crime should also collaborate more robustly with law enforcement regarding financial crime matters; with their international counterparts; and with the full community responding to these challenges, including banks, fintech firms, regtech firms, tech firms, academics, and consumer and community advocates.<sup>13</sup> People need safe and productive spaces for brainstorming, whiteboarding, and debating these complex issues.

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<sup>13</sup> A mark of a good meeting is one where the host needs to ban acronyms because the people in the room are not speaking just to their usual counterparts.

*Agile workflow.* In the same vein, regulators should adopt the “agile” methods of workflow that are standard in the technology world. These processes, which rely on high cross-discipline collaboration and short, intense problem solving, are discussed further under Transforming Regulatory Culture, below.

**Recommendation 4: Merge fintech innovation, regtech, suptech and data science**

As explained in Paper 4, all of the federal financial regulators have innovation initiatives focused on how to regulate fintech. Several of these encompass regtech, but most do not, especially among the bank regulators, where the regtech work is usually done by a separate group in the agency’s supervision unit. Some agencies also have robust data science units, often focused on monitoring markets through AI and big data.

These units should be combined, or at least develop robust ways to communicate and coordinate. Again, they are all dealing with the same technology trends. The solutions they create need to have the same basic designs, especially in terms of data protocols, and need to become interoperable. To that point, it may be useful to drop the word “suptech” in favor of the more general “regtech,” as do leading agencies like the UK’s FCA.

**Recommendation 5: Recruit top tech talent**

Regulatory agencies today typically follow the traditional organizational model in which technology work is done by IT and the rest of the organization uses its services, without needing to internalize extensive technology expertise. That model has also been the norm among banks.

Today, leading banks are thinking of themselves not as financial firms, but as technology firms. At JPMorgan Chase, the mantra is “mobile first, digital everything.”<sup>14</sup> Regulators need to go through a parallel transformation.

This will include the need to retrain staff and to recruit robust tech skills, not in IT but in digital technology and data science.

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<sup>14</sup> <https://www.institutionalinvestor.com/article/b189czlk410ggh/jamie-dimon-is-not-messing-around>

Some agencies are well along in this journey. As noted in Paper 4, the FCA’s innovation division has a headcount of approximately 200 people, and approximately half of the positions are for data scientists. In the US, both the SEC and FINRA have very robust data science groups, as does the CFTC.

Regulators worry about the difficulties of attracting top technology talent, citing problems with pay scales, reluctance of engineers to live in Washington and state capital cities, and culture differences, such as impatience with bureaucracy and slow pace. There is also a perception that the regulatory realm is not creative.

All of these are formidable issues, but these obstacles are beginning to clear. In a 2019 interview, former CFTC Chairman Christopher Giancarlo challenged the widespread perception that regulatory agencies cannot attract top tech talent,<sup>15</sup> explaining how his agency has been able to do so. An emerging strategy is to promote the idea that the regulatory realm is effectively a “last frontier” for new technology, and also a “green field,” largely untouched by new-generation technology. Engineers and developers like to work on interesting problems, and financial regulation is replete with them.

Another strategy is to promote the importance of the work. Dispelling the stereotypes of government and bureaucracy, agencies should recruit for people who care about the regulatory mission, such as to protect people from predatory lending or to save children from human trafficking – efforts that could be more rewarding than, say, improving an online shopping algorithm.<sup>16</sup>

FDIC Chairman Jelena McWilliams posted a message in American Banker Online regarding her efforts to recruit a tech person to become the agency’s Chief Innovation Officer. She said:

*I am on a mission to change how the Federal Deposit Insurance Corp. views innovation, and I need some help... We cannot offer free meals, a sand volleyball court or a workday spent in socks, flip-flops or slippers. We cannot bring pets to work. Heck, for the most part, we cannot even offer free coffee. What we do offer is a chance to join a respected federal agency and its dedicated public servants who are hustling to make the FDIC agile, forward-looking and responsive.<sup>17</sup>*

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<sup>15</sup> <https://www.jsbarefoot.com/podcasts/2019/6/25/glko26jp3qq6rp7xptxjmoq20ve1kh>

<sup>16</sup> This strategy appears to be working in the private regtech realm. ComplyAdvantage styles itself, “Financial Crime Fighters <https://complyadvantage.com/financial-crime-fighters/>. The firm I cofounded, Hummingbird, offers “superpowers for financial crimefighters” <https://hummingbird.co/platform-features/>

<sup>17</sup> <https://www.fdic.gov/news/letters/innovation.html>

Recruiting efforts might include use of existing government programs (or creation of new ones) that permit use of “donated executives” or government/industry personnel exchanges. These exist in some parts of the federal government.

This recruiting strategy needs to be combined with extensive retraining of staff, as discussed under culture. Tech people joining these agencies need to come into all ranks, including senior ones, and to be integrated into the core work of the institution, as discussed under culture and staffing models.

### **Recommendation 6: Adopt and foster routine technology experimentation**

Innovation, always and everywhere, requires trying things. Trying things requires accepting that some experiments will fail. These insights are central to technology innovation, but foreign to financial regulation. They also are not even robust in the financial industry, partly because regulatory constraints tend to work against trial-and-error innovation. Error and failure are generally anathema to the financial regulatory world.

This will have to change. It will not be possible to accelerate change in the regulatory system, safely and soundly, unless both regulators and industry can test new ideas to determine whether and how they work. The speed and novelty of technology shifts require regulation testbeds. At the same time, of course, the risks and rules in finance will make it essential that such testing be done in contained, controlled safe spaces.

*Regulatory sandboxes.* As discussed in Paper 4, the seminal regulatory invention for testing has been “regulatory sandboxes.” To date, these have focused largely on testing fintech innovation under the regulator’s watchful eye. Increasingly, the model is being extended to testing of regtech. As discussed in Paper 4, the first formal regulatory sandbox was created by the Financial Conduct Authority in the UK, which launched the program in 2015 and has now run tests with dozens of companies.<sup>18</sup> Criteria for fintechs entering the FCA program (which is now also open to regtech firms) include that applicants must be offering an innovation that can benefit consumers, directly or indirectly, and that raises some kind of

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<sup>18</sup> <https://www.fca.org.uk/news/press-releases/financial-conduct-authority-provides-update-regulatory-sandbox>

regulatory question. According to research by the Aspen Institute, as of spring 2017, at least 23 countries have created or are exploring regulatory laboratories, often called “sandboxes” or “reglabs.”<sup>19</sup> Most are patterned in part on the FCA model, but they exhibit considerable variation.

In the United States, the CFPB initiated experimentation even before the FCA sandbox by launching Project Catalyst.<sup>20</sup> In the past several years, that initiative has been replaced by a larger program that includes both a sandbox and No Action Letters.<sup>21</sup> NAL’s are a widely used regulatory device that allow companies to apply to have an innovation reviewed. The reviewing agency refrains from providing an official “blessing” of the concepts involved, but can issue a letter saying that the approach, as described, will not cause them to bring an action against it. These are normally made public and become a form of guidance for both the individual applicant and others with similar plans. The CFPB has invited submissions proactively, as part of its innovation program.

Other sandbox-type programs have been growing. The Comptroller of the Currency (the regulator of national banks) is exploring use of pilot testing under its Responsible Innovation initiative.<sup>22</sup> The State of California has run a past pilot program to evaluate small-dollar, high-priced credit. The Commodity Futures Trading Commission may do testing under the LabCFTC initiative it launched in 2017.<sup>23</sup> Other sandboxes have been adopted in the U.S. at the state level, starting with one in Arizona.<sup>24</sup>

The term “sandbox” has been more controversial in the United States than in other countries, with some regulators and advocacy groups objecting that it seems unserious and sends the wrong signals on treatment of consumers. Former New York Banking Superintendent Maria Vullo famously said,

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<sup>19</sup> <https://assets.aspeninstitute.org/content/uploads/2017/07/Modernizing-Reglabs.pdf>

<sup>20</sup> <https://www.consumerfinance.gov/about-us/project-catalyst/>

<sup>21</sup> <https://www.consumerfinance.com/2019/09/12/cfpb-finalizes-product-sandbox-proposal-and-changes-to-trial-disclosure-no-action-letter-policies-discloses-plans-to-propose-interpretive-letter-program/>

<sup>22</sup> <https://www.occ.gov/news-issuances/news-releases/2016/nr-occ-2016-135.html>

<sup>23</sup> <http://www.cftc.gov/LabCFTC/index.htm>

<sup>24</sup>

[https://www.google.com/search?q=arizona+sandbox&rlz=1C1CHBF\\_enUS854US854&oq=arizon+sandbox&aqs=chrome.69i57j0l7.10055j0j4&sourceid=chrome&ie=UTF-8](https://www.google.com/search?q=arizona+sandbox&rlz=1C1CHBF_enUS854US854&oq=arizon+sandbox&aqs=chrome.69i57j0l7.10055j0j4&sourceid=chrome&ie=UTF-8)

“Toddlers play in sandboxes. Adults play by the rules.”<sup>25</sup> This concern has prompted a number of regulators to prefer alternative terminology, calling their programs labs, pilots, and greenhouses. At bottom, however, these are all programs that enable regulators to “test drive” innovation.

These regulatory testbeds raise many design issues that need to be thought through. One is whether to actually “waive” current regulatory requirements, or instead just to focus on issues that may involve regulatory ambiguity.<sup>26</sup> Other questions include whether to permit sandbox testing with real consumers; whether consumers should be informed that they are in a test; how to assure that consumers will be made whole if the project produces harm or the innovator fails; how regulators should monitor the progress of the tests and measure their impact; how to protect the IP of applicant companies while assuring transparency and capturing of useful guidance for others; how to avoid creating a perception that innovators have to apply for government approval; whether tests should be time-limited to prevent them from becoming “loopholes” around existing rules; whether to enroll applicants in cohorts or with rolling entry; whether regulators should proactively invite sandbox applications on particular problems they, themselves, hope to solve; how to prevent the sandbox experience from being touted or perceived as a regulator’s endorsement; and how to feed learnings from sandbox activity back into regulatory rules and standards for the wider marketplace.<sup>2728</sup>

Again, regulators should work to expand the sandbox concept into evaluating regtech, in addition to fintech.

*Industry regulatory sandboxes and labs.* In addition to running their own testing programs, regulators should also aggressively encourage the industry to do so and should clarify how to conduct such experiments to satisfy regulatory requirements and risk standards. As noted earlier, the industry

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<sup>25</sup> <https://www.coindesk.com/new-york-finance-watchdog-fiercely-opposes-sandboxes-for-fintech-firms>

<sup>26</sup> Most programs globally do not waive current rules, unless there is explicit statutory permission, as with CFPB disclosure experiments.

<sup>27</sup> <https://www.bankingexchange.com/blogs-3/unconventional-wisdom/item/6940-reglabs-time-for-a-major-regulatory-experiment>

<sup>28</sup> [https://issuu.com/katherinefoote/docs/fintech\\_law\\_report\\_may\\_june\\_2016](https://issuu.com/katherinefoote/docs/fintech_law_report_may_june_2016)

rarely runs innovation experiments, especially on regulatory technology, largely out of concern about potential regulatory disapproval.

However, this is beginning to change. In December 2018, as noted in Paper 4, the four U.S. federal regulators of banks and credit unions collaborated with the Financial Crimes Enforcement Network, FinCEN, to issue a joint statement that both encourages use of AML regtech and encourages testing of regtech solutions.<sup>29</sup>

Similarly, in 2019 a joint statement was issued by four federal agencies encouraging the industry to explore use of alternative data in loan underwriting, to expand financial inclusion without compromising loan quality.<sup>30</sup> That action was inspired, in part, by research from the nonprofit sector, which is also moving to build objective testing capacity. FinRegLab (an entity for which I chair the board of directors) released a study in 2019<sup>31</sup> that found promising results on use of cash flow data as an alternative, or supplement, to traditional credit history as a way of evaluating creditworthiness. In 2020, FRL plans to conduct testing focused on use of artificial intelligence in finance.

Regulators should play an active role in encouraging more innovation experimentation by government bodies, industry, and not-for-profits, and in clarifying what testing practices are acceptable, in higher risk areas.

Arguably the greatest benefit of sandboxes and tests is that they accelerate learning, especially for regulators who have few ways to see cutting edge innovation up close. By understand newly emerging products and practices, they can prepare for future market trends and, where necessary, prevent harms from arising and spreading before the regulatory machinery can catch up with them. Finding the right balance between permitting innovation and heading off risk is challenging, but this is precisely why

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<sup>29</sup> <https://www.fincen.gov/news/news-releases/treasurys-fincen-and-federal-banking-agencies-issue-joint-statement-encouraging>

<sup>30</sup> <https://www.consumerfinance.gov/about-us/newsroom/federal-regulators-issue-joint-statement-use-alternative-data-credit-underwriting/>

<sup>31</sup> <https://finreglab.org/press-release-cash-flow-empirical-research>

sandboxes are so important as a method for “ring fencing risk” so that innovation can be evaluated and where necessary, fine-tuned, before impacting large numbers of people.

*Other kinds of testing.* Finance might benefit from looking at testing models in other fields, especially medicine. Like finance, medicine is being transformed by technology. The field has a long tradition of holding clinical trials under regulatory guidelines, to check for efficacy and risk. Some of these might be adaptable to finance. Another evolving field is autonomous vehicles, in which regulators are seeking evidence for how much these innovations can improve safety. With empirical evidence of sufficient gains, government will deem these innovations worthwhile, even though they will not be perfect.

### **Recommendation 7: Adopt TechSprints and other regtech innovations**

Beyond sandboxes, regulators are beginning to develop other novel ways to innovate their own activities and accelerate how they learn and change.

*Tech Sprints.* As discussed in Paper 4, the most notable of these innovations is the “tech sprint,” which, like sandboxes, has been pioneered by the UK’s Financial Conduct Authority.<sup>32</sup> Where sandboxes typically focus on how to regulate fintech innovation, tech sprints focus on innovative regtech.

The sprints are essentially hackathons<sup>33</sup> in which the regulator teams up subject matter experts with software developers and designers and has them work intensively to develop technology aimed at solving a given regulatory problem. The sprints are designed as competitions, with culminating events that draw in a larger audience and at which judges evaluate the teams’ pitches and announces winners in accordance with criteria set at the outset. The sprints typically run for two or three days, although they can be shorter or longer (the FCA conducted one major one, on model-driven, machine-executable regulation, for two weeks).

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<sup>32</sup> <https://www.fca.org.uk/firms/innovation/regtech/techsprints>

<sup>33</sup> <https://www.quora.com/What-is-a-hackathon-What-do-you-do-in-it-Is-it-a-team-event-If-yes-what-are-team-sizes>

In contrast to traditional measures for convening people on regulatory topics, tech sprints produce not whitepapers or working groups, but actual computer code. The FCA has developed mechanisms for graduating winning solutions into various kinds of incubator environments where they can be further developed.

The FCA has held seven of these events over about four years, and recent ones have been highly international. In July 2019, they held a major sprint on privacy-enhancing technologies for AML, in collaboration with the first-ever sprint held in the United States.<sup>34</sup> The latter was keynoted by Jelena McWilliams, the Chairman of the FDIC, who also served as a judge. Results are being presented to U.S. agency heads, and the exercise exposed dozens of U.S. regulators not only to new technology ideas, but also to new ways of innovating in their own work.

Several U.S. agencies are currently planning or exploring tech sprints. The CFPB issued a Request for Information on the sprint concept in 2019.<sup>35</sup> In November 2019, FINRA held a sprint-style event, called a Buildathon, at MIT.<sup>36</sup> At the FCA's summer 2019 tech sprint, U.S. Assistant Treasury Secretary Marshall Billingslea announced plans for a Treasury Department tech sprint on financial crime and terrorism in 2020.

Tech sprints are complex to organize. They require securing data for use by the “hacker” teams, which can be expensive. They require access to robust cloud computing capacity. Following the FCA's model, they require curating the assembly of teams from the desired kinds of entities and with the needed cross-section of skills, such as regulatory subject matter experts, front end and back end developers, and designers. They require reaching agreements relating to use of IP before, during and after the event. Especially challenging is the step of advancing successful teams into incubator environments, since, under the FCA's model, the teams are generally required to be drawn from multiple companies. This is important both to maximize cross-fertilization of ideas and to prevent companies from being able to style

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<sup>34</sup> This U.S. sprint was hosted by the Alliance for Innovative Regulation, AIR, of which I am founder and CEO.

<sup>35</sup> [https://files.consumerfinance.gov/f/documents/cfpb\\_rfi\\_tech-sprints.pdf](https://files.consumerfinance.gov/f/documents/cfpb_rfi_tech-sprints.pdf)

<sup>36</sup> <https://www.finra.org/media-center/finra-unscripted/the-buildathon>

themselves as having “won” a regulator tech sprint, which could imply government endorsement. For similar reasons, it is difficult for agencies to run the incubators directly, since these projects may ultimately produce commercial products. Sprints are also expensive to run.

In 2020, the FCA published an open-source user manual on how to organize these events.<sup>37</sup>

*Innovative ways to work with industry.* The Monetary Authority of Singapore has also been a leading innovator in the regulatory process.<sup>38</sup> They have a program for “co-creating” some regulations with industry, again working on the theory that rapid, sound innovation requires intensive collaboration. MAS has initiatives underway ranging from providing venture funding for fintech to running an open API system allowing financial institutions to locate fintech innovators.

MAS undertook one initiative to explore creating a “shared utility” database for Know-Your-Customer compliance. Ultimately it abandoned and then redesigned the experiment. MAS head Ravi Menon has pointed to the effort as an example of the value of trying and testing new regulatory strategies, even though they raise failure risk.<sup>39</sup>

*Synthetic data and modeling.* Various players are exploring the potential to develop repositories of synthetic data that could make it easier and less costly to conduct regulatory testing and experiments. Procuring the data needed for tech sprints is often expensive, partly because it needs to be realistic but cannot be “real” in the sense of revealing people’s information or even making that information vulnerable. The FCA is exploring whether and how to develop sets of synthetic data that could permit easier modeling, and that would also be available continuously, beyond their use in periodic sprints.

In the UK, the trade group Innovate Finance<sup>40</sup> explored a related project in the early days of the FCA’s sandbox. The concept was that data could be contributed to a shared repository and that innovators, including fintechs at pre-launch stage, could experiment with it to see how their innovations

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<sup>37</sup> <https://fca.org.uk/publication/research/fostering-innovation-through-collaboration-evolution-techsprint-approach.pdf>

<sup>38</sup> <https://www.mas.gov.sg/development/fintech>

<sup>39</sup> <https://www.businesstimes.com.sg/banking-finance/sff-x-switch-2019/mas-to-reboot-e-kyc-project>

<sup>40</sup> <https://www.innovatefinance.com/>

would perform. Some of the work on this was done by the Boston Fintech Sandbox, a nonprofit that offers a similar resource.<sup>41</sup>

An important component of efficient regulatory testing is expanded use of modeling. Regulators already run models in many areas to analyze trends and predict risk. As more data becomes available to them, they will need to expand their modeling capabilities substantially.

*Prizes.* Another concept being explored by some regulators is the offering of an innovation prize. In 2018 the CFTC leveraged the Science Prize Competition Act of 2015 to seek input on an innovation program in which it would offer a prize for breakthrough entries. This effort is still developing, but the Commission and other agencies are exploring the use of prizes. Potentially these can take the form of cash or of other types of recognition or opportunity.

*Small-scale trials and testing.* Technology developers use a wide range of techniques for trying out innovations in ways that do not disrupt use of a product or process, so that new things can be evaluated and if necessary, easily reversed.<sup>42</sup> Some of these concepts could be adapted for regulators and financial companies experimenting with regtech.

For example, software developers use “A/B testing” to run two different versions of an innovation for different sets of users, and measure how each reacts. They enlist “beta customers” who agree to use a new technology before it is ready for full deployment, to elicit feedback. They use “feature flags” that act like switches, enabling entire sets of functionality to be turned on or off for different customers. A core concept in software development is the ability to do “fast rollbacks,” enabling engineering teams to easily undo something they have designed as soon as they realize it is not working.

There are obvious limitations on regulators’ ability to use such techniques and to allow the industry to do so. However, it could be valuable to explore when and how these kinds of efforts can be appropriate, and how they might accelerate learning and deployment of updated regulatory requirements and tools.

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<sup>41</sup> <https://fintechsandbox.org/>

<sup>42</sup> <https://thefinancialbrand.com/82506/disruption-banks-and-credit-unions-agile-fintech-innovation/>

A mainstay of technology innovation is that the innovator must be able to measure everything, to find out what works. As was discussed in Papers 2 and 4, the concept of measuring effectiveness is not robust in the regulatory realm, but should be encouraged.

Another technique used throughout the technology world is the offering of “bug bounties.” Companies offer rewards to hackers who can find bugs and flaws in their software. This has the effect of bringing whole communities of experts into identifying needed improvements and fixes.

Threatcasting. A thought-provoking example of out-of-the-box regulatory work, not drawn from the financial world, is the use of “threat-casting” exercises by the military, including the Army Cyber Institute at West Point. The author had the opportunity to participate in one of these kinds of events, which drew together people with experience as diverse as cybersecurity, anthropology, criminal justice, and writing science fiction. Small teams worked together to imagine a major security threat that could emerge five years hence, and then to “backcast” the situation to present day, in order to think through what should be done, now, if the problem is to be prevented. Among other things, the groups were asked to write up their scenarios in the form of narrative fiction, which had the effect of both bringing the issues to life and sparking creative thinking.

Technology first, policy second: Regulatory bodies often struggle to think outside their usual boxes on innovation because their ideas are bounded by current regulatory requirements. Some have found that it can help to separate the technology problems from the policy problems as they think through a given challenge. Exercises like tech sprints can be framed to say in effect, “Could we design technology that would fix this problem, if we didn’t have to worry about what the current rules say?” In cases where the answer is yes, this two-stage approach can then make it easier to build support for policy changes, because the superiority of a new approach has been demonstrated – preferably with people at the table who are positioned to effect the needed regulatory adjustments.

Keys to regulatory innovation. These kinds of regulatory innovations share several kinds of common logic. One is that progress will come from causing intensive collaboration among disparate

kinds of people – by getting people out of their siloes and exposing them to other views and skills (especially, for regulators, by getting tech innovators to the table).

Another is that new kinds of tools need to be invented to bridge the gap between “talk and action.” There is ample discussion of problems and opportunities in regulation, but translating those into workable solutions is a long and difficult process. Traditional mechanisms like issuing white papers, writing articles, holding conferences, and writing new laws and rules, are highly linear and inefficient in translating ideas into concrete steps. Innovators are trying to shortcut this process by convening situations where participants do not merely talk, but actually “build” something that, with luck, can become a springboard, or even a prototype for a concrete, new solution.

### **Recommendation 8: Become data-centric and prioritize safety, privacy and data rights**

Regulators will have to become data-centric organizations, remaking themselves around the core activity of accessing, using – and protecting -- massive amounts of data.

Accessing and using the data will require many of the recommendations outlined in this section. Protecting it will require additional efforts.

The rapid evolution of digital technology has left law and policy lagging behind. Policymakers in the U.S. and globally are moving to close that gap. Sweeping privacy laws have passed in Europe and other parts of the world, as well as in the state of California. Federal agencies and the U.S. Congress are holding hearings and proposals of various kinds to increase privacy protections and consumer data rights, while striving still to permit the benefits of online activity and data digitization.

The financial regulators are secondary players in these larger privacy debates and trends. The financial world has existing privacy law embodied in the Gramm-Leach-Bliley Act and Regulation P of the CFPB, establishing rules on use and sharing of individual “Personally Identifiable Information,” or PII. To some extent, this domain has been carved out of wider privacy reform initiatives, on the logic that customer information in the financial sector is already protected by law. The revolution in data use, however, will transform financial companies as much as any other industry. The upside potential (see

Papers 3 and 4) as well as the downside risks (Paper 5) of these shifts will be among the most important and difficult challenges for financial regulation.

This means the financial regulatory bodies have an important role to play as they oversee the financial industry and digitize their own activities and contribute to overall privacy policy as it evolves. They may develop innovations regarding Privacy Enhancing Technologies that will be useful to the wider discussion.

One principle that should guide this work is to look for technology solutions, before or in addition to crafting legal ones. Another is not to adopt legal restrictions without a full understanding of the technology issues involved, including how they are likely to evolve. A third is to avoid establishing legal restraints that are likely to be easily circumvented by fast-changing technology.

#### **Recommendation 9: Move agencies and industry into the cloud**

It will be impossible to make regulation data centric, nimble and efficient, without moving the system to a cloud computing environment. As discussed in Papers 3 and 4, cloud computing solves these problems in ways that traditional IT cannot. It also makes it possible for small entities – fintechs and also small banks – to level the competitive playing field vis a vis larger players, both in product offerings and in cost management.

As discussed in Paper 5, this shift will raise considerable risks and challenges that will need to be addressed. In addition, special efforts may be needed to help community banks migrate to these systems from their current centralized IT setups.

#### **Recommendation 10: Build and adopt open source computer code**

For many in the financial regulatory world, it seems counterintuitive that open source can cut risks (as well as costs). The term “open” sounds insecure, and the notion that code is not proprietary seems like it would undermine opportunities for commercially successful fintech and regtech.

As discussed in Paper 4, however, the reality is just the opposite. The technology world has migrated to wide scale use of open source computer code, after decades of assuming that proprietary code would provide more competitive advantage. The mixing of the two – leveraging widely shared open tools

where they work best, and then building proprietary solutions on top of them – enables faster and easier innovation, and facilitates interoperability, for everyone.

*For regulation, this will be among the most important changes the system can adopt.*

This issue, including how open source works, is discussed in more depth in Paper 4.<sup>43</sup> Briefly, regulators should expand their use of GitHub, or potentially create or foster a regulatory version of it, where they can share code with each other and with financial companies and vendors. This will build interoperability, save massive amounts of separate development time, and enable constant enhancement as new solutions are built on top of old ones. It will also enable crowd-sourced vetting of technology to discover problems and vulnerabilities. The process can transform regulatory effectiveness and efficiency.

### **Recommendation 11: Rebalance consumer financial regulation**

As discussed in Papers 1 and 2, today’s regulatory compliance functions absorb a great deal of work and resources into processes that may not be valuable. Their design was arguably the best that could be done in the analog age, but need to be updated for the digital world.

Policymakers should review the kinds of failings described in Paper 2 and the potential fintech solutions for them outlined in Paper 3. Regulatory strategy should seek to pare away low-value requirements that are consuming extensive resources and shift to unlocking the potential of new fintech to solve consumer’s problems. In doing so, they will need to craft new or updated ways to deal with the many risks enumerated in Paper 5.

Among the key strategic opportunities are the following.

Win/win redesign. Innovative fintech offers a chance to revolutionize the political paradigm that has always surrounded policy debate on consumer financial protection and inclusion. Advocates have long championed pervasive regulation driven by the assumption that many businesses will try to take advantage of consumers where they can, unless prevented by government. The industry, for its part, resists most regulation based on the assumption that it will inevitably saddle them with costs and burdens.

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<sup>43</sup> It will also be the subject of a whitepaper to be issued by the Alliance for Innovative Regulation in 2020 which will be available at [www.RegulationInnovation.org](http://www.RegulationInnovation.org).

The sudden emergence of technology-based disruption creates a chance to break this pattern (without having to resolve past arguments). It creates the opportunity to improve consumer outcomes and reduce industry costs, together. It makes it possible to serve more people, profitably, and to protect them from harm in new ways. As industry disruption inevitably forces regulatory change, the very process of opening up laws and regulation for revision will offer opportunities to rethink old approaches.

Mobile-first strategies. Policymakers should leverage the opportunity created by high usage of smart phones by lower-income and minority consumers. As noted earlier, these groups have become disproportionately high users and can now, for the first time, enjoy robust inclusion in mainstream finance. Furthermore, consumers aged 65 and older have recently been the fastest growing segment of the smartphone market.<sup>4445</sup>

Breakthroughs for vulnerable consumers. Perhaps the most historic opportunity arising from technology is to change the regulatory risk dynamics of serving high-vulnerability groups like lower-income consumers, people of color and those with disabilities. Again, technology is creating new ways to widen access to the financial system, through reduced product and distribution costs, enhanced risk assessment tools using big data and data analytics, and leveraging of high cell phone adoption by nearly all customer segments. However, regulators have inadvertently created uniquely high regulatory risks for businesses that serve vulnerable consumers. Failure to establish reliable and workable regulatory standards will tend to leave these consumers chronically underserved and overcharged. A key goal of a better system is to create enhanced regulatory clarity and profit opportunities for businesses that want to reach a more inclusive market with fair products and prices that accurately reflect risks and costs.

Beyond disclosure. One area deserving review is reliance on mandatory disclosures which, as explained in Paper 2, are generally not even read and have shown little evidence of helping consumers.

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<sup>45</sup> <https://www.weforum.org/agenda/2017/05/think-older-people-are-technophobes-think-again>

Financial consumer protection has relied heavily on disclosures for more than half a century – a long enough experiment to enable policymakers to draw conclusions. People today increasingly get their information from Google, in their mobile phone, or from Alexa.

In this regard, it may be instructive to look at regulation in other sectors, such as the comparative effectiveness of food labeling. There may also be interesting models in consumers' ability to use technology to self-monitor, as many do today with health and fitness apps.

### **Recommendation 12: Modernize regulation for combating financial crime**

As discussed throughout this paper, current regulatory strategies to counter money laundering have failed, with the UN estimating that less than one percent is caught. The good news is that there is both new technology and rising policy impetus to turn this situation around.

Here again, policymakers should seek to remove low-value requirements from the regulatory system. As explained in Paper 2, this is the single most expensive realm of regulation, absorbing tens of billions of dollars annually to produce inadequate results. Those resources could be redirected to new and more effective ways to counter financial crime.

*Eliminating failure and waste.* In particular, regulators should encourage industry use of better technology to verify customer identity; to more accurately flag potential suspicious activity (both eliminating today's massive rates of false positives while also cutting false negatives); and to investigate suspicious cases using robust data and producing timely and robust reports. FinCEN should continue creating easier and timelier channels for reporting suspicious activity through API's.

*Robust data-sharing.* Perhaps most importantly, the system should be overhauled to enable much more sharing of large sets of data and to subject them to machine learning analysis that can find large patterns of financial crime, while still protecting privacy. Evaluation should continue regarding the value and reliability of Privacy Enhancing Technologies, as discussed in Paper 4, to enable encryption and other techniques that permit wide-scale sharing of information while also safeguarding identity information.

The financial regulators should increasingly interface with law enforcement, as has begun to happen, to understand what it needs. Law enforcement personnel are the users of the financial crime

information gathered and reported by the financial industry. The financial regulators are the people charged with assuring that companies report the information properly. Closer collaboration can greatly enhance the value of the data, without increasing costs.

*Decentralized data and traveling algorithms.* This sharing of data should be developed, as much as possible, through decentralized systems that leave the information where it is rather than collecting it in central repositories that attract hackers and cybercrime. In essence, the system should not bring the data to the technology, but rather should take the technology out to the data. See Paper 5 for discussion of the “traveling algorithm.” This concept should be applied to other regulatory realms as well, beyond AML.

*Other concepts.* Other ideas for improving AML regulation include setting tiers of risk exposure, in which very small bank accounts might be exempted from the KYC requirements that currently screen out many lower-income customers, especially in the developing world, as discussed in Paper 2.

In addition, as discussed in Paper 4, considerable work is underway to create “digital ID” systems that would automate and strengthen the KYC process. These also could potentially include something similar to using TSA Precheck for airline travel, in which people go through deep vetting and then have a credential that can be relied upon at every airport, without the need for each to evaluate risk.

*Beyond reporting.* As the information in the financial system moves into digital formats, it is possible that the “reporting” process in AML regulation can be eliminated, partially or even completely. Instead, law enforcement or perhaps financial regulators would be able to get access to the information they need directly through API’s. This would, obviously, have to be designed with strong safeguards on privacy and preventing abuse. New encryption technologies might make this possible.

### **Recommendation 13: Adopt outcomes-based regulation where appropriate**

As discussed in Paper 4, the capture of full, digitized data and use of better analytical tools in regulation may enable some types of regulatory activity to shift to outcomes-based strategies. If companies can demonstrate through complete, real-time data that they are meeting regulatory standards regarding compliance and risk, the regulator could ease some of the process-oriented oversight that accounts for most compliance costs.

An issue in traditional financial regulation is that inadvertent noncompliance is often severely punished, as regulators may view it as evidence of negligence. Penalties are intensified in cases where there is evidence of intentional lawlessness, but these are relatively rare. Measurable, outcomes-based performance standards could make it easier for companies to meet their obligations.

In pursuing this strategy it can be instructive to look at other regulatory sectors. As discussed in Papers 2, 3 and 4, there is little effort, in financial regulation, to ask whether the results being achieved are the results desired, in terms of financial stability, customer protection and access, and financial crime. Sectors that can objectively and automatically measure results, such as water and food quality and airline safety, seem to enjoy generally high success rates, so that failures are highly newsworthy. This is less true in the financial sector, where it is often unclear what “success” looks like and how to evaluate whether it is being achieved.

**Recommendation 14: Remove legal and procedural barriers to regulator innovation**

As discussed earlier, policymakers should consider updating laws and government protocols that prevent or slow down regulator efforts to adopt, or even to explore, innovation. In 2019 the Buckley law firm undertook a *pro bono* project<sup>46</sup> to examine issues cited by agency officials as impeding innovation. The report, *Federal Regulators’ Dilemma: Administrative and Regulatory Hurdles to Innovation*, pointed to difficulties in these areas:

- Administrative Procedures Act (APA)
- Paperwork Reduction Act
- Freedom of Information Act
- Federal Advisory Committee Act (FACA)
- Anti-Deficiency Act
- Federal Acquisition Regulation
- Personal and Hiring Policies

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<sup>46</sup> This project was undertaken for my nonprofit, the Alliance for Innovative Regulation and for the Omidyar Network.

- Agency Culture

These laws and processes play important roles in assuring that government is transparent and accountable, in preventing conflicts of interest, in controlling regulatory burden, and other worthy goals. However, they originated in a pre-digital era, when speed of action mattered less than it does today. Policymakers should review them to seek ways to preserve their purposes while reducing unintended regulatory delays or prevention of desirable innovation.

Several bills have been introduced in Congress that would allow limited exemptions from some of these rules for purposes of R&D, one affecting the CFTC and another for FinCEN. Such exemptions could be undertaken as pilot tests, designed as a temporary suspension rather than revision of the traditional rules, and with time limits and requirements for disclosure and evaluation.

As noted earlier under Obstacles, agencies have reported that the combination of these laws prevents some regulators from even being able to pilot test new technology. IT procurement procedures are designed for major purchases and require extensive time and competitive bidding, making it impractical to buy technology tools on the small scale to test them. Meanwhile, agencies are generally not allowed to accept test versions of software gratis, as this could be construed as a gift. If agencies cannot buy new technology and cannot try it for free, they have no way to try it out.

The Buckley report offers a range of recommendations for addressing these issues.<sup>47</sup>

A good project for the interagency innovation task force suggested in Recommendation 2 would be to examine these issues and jointly change practices or, where necessary, propose legislative solutions.

**Recommendation 15: Establish optional parallel regulatory channels based on regtech**

Today's financial regulatory system is too vast and complex to reform through traditional means. As discussed in Papers 1 and 2, major reform laws can run thousands of pages, take years to implement, impose massive transition costs, sometimes conflict with existing rules, and produce unintended consequences. Conventional wisdom holds that a system of this scale is beyond comprehensive reform.

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<sup>47</sup> <https://www.regulationinnovation.org/report>

Piecemeal reform, however, tends to create other problems, including sometimes conflicting with other existing parts of the system. Even if an overhaul was possible, moreover, no one today knows precisely how best to design a new system comprehensively. The full ecosystem is engaged in a massive collective learning process.

Furthermore, political forces tend to resist regulatory change. Even parties that would like to see reform are often reluctant to embark on it, for fear the results will end up negative, or at best will be negligible and therefore not worth the transition costs.

One solution to this is to enable gradual regulatory change that does not have to be forced on the whole system at once. The government can innovate using the same methods as the private sector, namely by creating small initiatives on the side of the main system, allowing them to experiment and grow, and introducing them into the full system only after they are well developed and have proven themselves.

In some areas of regulation, these new strategies can be introduced as a voluntary option for industry. This would reduce resistance to reform and enable time for new approaches to be vetted and polished. If these innovations prove to be both more efficient and more effective, they will attract more and more companies and over time, can evolve into the primary regulatory framework, allowing the older, low-tech methods, in some areas, to wither away.

For example, suppose a fintech company or a community bank is confident that its product is fair and transparent, understood by customers, performing as promised, and has no hidden or tricky terms and fees. The company could choose to opt into a regulatory review channel in which it would demonstrate compliance with laws barring unfairness and deception by providing data on the actual performance of the product. The regulator could review the product's terms at the outset and if acceptable, connect with the company through a data API data interface. The regulator would then monitor the product against empirical metric standards that the agencies have developed and shared. These might capture factors like percentage of revenue earned through penalty income, levels and types of customer complaints, and successful claims rates for products with insurance-like features – in short, factors that reflect whether the product is performing as promised.

Companies opting to be evaluated on these customer outcomes would then be released from most of the traditional process reviews that regulators typically conduct today. These generally include evaluation of compliance “inputs,” such as the quality of the company’s compliance and risk management programs, identification of inherent and residual risk, quality of controls, quality of policy, procedure, training, monitoring, complaint management, IT systems, marketing and advertising materials, sales practices, compensation and incentive structures, personnel policies, corrective action and remediation, and the quality and independence of their “three lines of defense” – i.e. separate sets of compliance controls maintained by the business line, the compliance unit, and internal audit. These control systems are where most compliance expense reside. If a company can assure fair customer outcomes through the inherent design of their products, and can prove it has done so through data, the government could take the stance that regulators need not care how it accomplished these results.

Obviously this approach would not work for all areas of regulation. Even where it could, a major challenge would be creating the empirical standards for measuring fairness, and making them function as a “safe harbor” if the standards are met (absent evidence of intent to evade the law’s mandates). If government decided later that its standards were wrong, it would change them prospectively, but not retroactively, in order to build confidence in the industry that the new channel was transparent and reliable.

In effect, the alternative regulatory channel can operate as a learning laboratory for regulators, starting small and growing organically over time.

#### **Recommendation 16: Address the changing nature of the banking and payments systems**

Policymakers will need to think through whether fintech innovation should change the design of the banking and payments system, including whether only banks should be able to settle payments and if so, what kinds of companies should be able to be banks.

Digital currencies can circumvent traditional payments rails. Facebook’s 2019 announcement of plans to offer the Libra payments system outside of the banking channel served as an alert regarding how profoundly technology could change traditional flows of money. Uber, too, already altered payments in a

different way, embedding them in the buyer’s experience, with no payment step required. China is expected to issue a fiat digital currency in 2020.<sup>48</sup> Non-crypto peer-to-peer payments are growing. Nonbanks in the UK can access the payment system.<sup>49</sup> Teleco companies throughout the world are functioning like “banks.” So are Chinese giants Alipay and Tencent. Technology is making global payments interfaces instant and fully interoperable. Nontraditional companies increasingly hold consumers’ money in nonbank transaction accounts. The Federal Reserve is rolling out real-time payment.

It will be necessary to revisit the first principles of financial system design.

### **Recommendation 17: Proactively drive industry innovation**

In keeping with the new strategy of “tech activism” suggested in Recommendation 1, the regulatory community should proactively foster industry adoption of both fintech and regtech. As discussed throughout this paper, one of the primary brakes on growth of superior technology in both realms is industry fear of regulatory criticism regarding innovation. In some cases, specific regulations or formal policies actually prohibit innovation. More often, the drag on adoption is simply regulatory uncertainty – a new technology is neither prohibited nor explicitly permitted. For banks, their examiners are often unfamiliar with the new technologies, creating reluctance to adopt them. Until the industry’s own tech cultures change, digitization will not meet its full potential. Changing this will require a pervasive and sustained effort.

*Leveraging industry infrastructure.* The financial industry includes an array of organizations that variously put forth professional standards, skill certifications, training resources, best practice guidance, and much more. These will need to be updated to incorporate fintech and regtech. While the industry will take the lead on this work, regulators can accelerate it by clearly signaling that change is needed.

*Reframing risk.* Nick Cook, head of innovation at the FCA, told an FDIC innovation conference at the FDIC in 2019 that he foresees a not-too-distant day when regulators will criticize banks not for

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<sup>48</sup> <https://fortune.com/2019/11/01/china-digital-currency-libra-wakeup-call-us/>

<sup>49</sup> <https://www.fintechfutures.com/2019/07/access-to-payment-systems-on-the-rise/>

using new technology, but rather for *not* using it, because some of the newer generation solutions are so clearly superior. That kind of message can break through the industry hesitance that is damming up innovation.<sup>50</sup>

Updating third-party risk guidance. For bank regulators, a key challenge will be to update rules and guidance on “third party risk.” Banks rely on a range of third parties to perform services for them and their customers. Some of these are vendors that perform “back-office” types of services. Some are partners that are customer-facing. These relationships introduce potential for risk, both for the bank and the public. The regulatory principle for managing these risks is that the bank is accountable for assuring that the third party does everything right, as if the bank, itself, was performing the function.

This sensible concept is increasingly difficult to apply in an environment where banks will need to use both regtech and fintech to compete. As discussed in Papers 3 and 4, digital technology is, almost by definition, young technology, especially in finance. This means that providers of digital services to banks tend to be young companies, often startups. These companies’ immaturity introduces risk into the relationships, both because the solutions have shorter track records and because startups have high risks of failure. Yet, if banks cannot adopt these newer technologies, they will fall behind marketplace innovation that can erode their customer bases and place them at a disadvantage in cost containment.

Various regulators are working on updating the third-party risk protocols to address these concerns. Efforts include clarifying how to run testing of new solutions against traditional ones, and also clarification of data security standards.

Another idea under discussion is that regulators (or even industry organizations) might create a standardized vendor questionnaire to capture the information banks need for their third-party risk evaluation. Currently, each financial institution creates its own form, often containing hundreds of questions. Fintech and regtech firms struggle to complete these questionnaires, which have become part of the notoriously long sales cycle for small firms offering services to banks (as noted in Paper 4, fintechs

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<sup>50</sup> <https://www.fdic.gov/bank/analytical/fintech/agenda.html>

joke that this process amounts to a graveyard for startup companies waiting months, or more than a year, for approvals).

A model here might be drawn from the educational sector, which adopted the Free Application for Federal Student Aid, or FAFSA form. Applicants' families fill out this uniform document, and virtually all colleges use it to evaluate need for financial aid.<sup>51</sup>

Another model for potentially streamlining third party risk review is reliance on third party data security audits, such as "SOC 2" certification. The acronym stands for Service Organization Control 2" and is a certification that verifies that a company has satisfied the standards of the American Institute of CPAs (AICPA) under its Trust Services Principles and Criteria.<sup>52</sup>

**Recommendation 18: Establish a "moon shot" project to digitize the information in the financial regulatory system and make it interoperable**

The interagency task force (or potentially the White House or the Treasury Department) should launch a "moon shot" type of project to determine how to digitize the information in the financial system and make the system interoperable. This is essential to enable regulators to keep pace as technology transforms the industry they oversee. Without it, growing swaths of the system will become invisible to them, due to the speed of change and volume of data. As discussed in Paper 4, the foundation layer of a modernized regulatory approach has to be a system of interoperable information.

*Interoperable standards.* The financial sector has numerous standards-setting bodies, public and private. One key strategy may be to create interoperability among existing standards, rather than aiming to replace them. The goal should be that industry maintains information in digitized forms that can be easily accessed by their own leaders and risk managers, and by government, with appropriate permissioning controls, and that can improve continuously over time without the need for periodic conversation to entirely new systems.

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<sup>51</sup> <https://www.usnews.com/education/best-colleges/paying-for-college/articles/completing-the-fafsa>

<sup>52</sup> <https://www.aicpa.org/interestareas/frc/assuranceadvisoryservices/aicpacybersecurityinitiative.html>

*Use of open code.* This is discussed further under recommendation 10.

*Regulation as a platform.* As discussed in Paper 4, over time, many regulatory functions should migrate onto platforms on which regulators set standards and companies that meet them can automatically interface with others. Among other things, this will enable modular “plug and play” solutions that can readily work together for both fintech and regtech purposes. Over time platform design can foster continuous innovation in the system, with regulators able to “push out” updates and upgrades automatically.

*Machine-executable regulation.* Regulators are also at work on making some regulations self-implementing by issuing them as “machine-executable” rules, in the form of computer code that can simply be “plugged in” by regulated firms.

*Machine-readable regulation.* There is also extensive work underway by both regulators and private firms on making rules machine-readable. This process attaches electronic tags to rules and guidance, so that machine learning tools can review and interpret them.

*Public/private engagement.* The task force could also be designed as, or could include, a public/private partnership that would bring regulators to the table with technology experts and other stakeholders. It should aim to produce not only written material, but also, if possible, a source of computer code that can begin to be adopted throughout the ecosystem.

*Possible models.* The work of the FCA offers a valuable head start on this work, especially in its Digitized Regulatory Reporting (DRR) project. Its public/privacy working group has made substantial progress in identifying needed technology and regulatory changes, and in quantifying the costs-to-benefits equation for a conversion of the system. (This issue is discussed in more depth in another paper by the author, a Request for Comment on a “[Regtech Manifesto](https://regulationinnovation.org/regtech-manifesto/).”<sup>53</sup>)

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<sup>53</sup> Available at <https://regulationinnovation.org/regtech-manifesto/>

One vehicle for such a project could be to create a Federally-Financed Research and Development Center.<sup>54</sup> FFRDC entities (a well-known example is the RAND corporation) can be sponsored jointly by several agencies and can also accept outside funding for research and development work, which could help with government resource constraints.

Work on this project should aim toward developing an ultimate governance body and process for these standards. One model for this might be ICANN, the public/private entity that sets standards for the internet.<sup>55</sup>

### **Recommendation 19: Transform regulatory culture**

This factor will determine whether the financial regulatory system will successfully modernize. If the needed culture shifts occur, all the other steps recommended will be possible.

Regulatory bodies are risk management organizations. Their leaders must figure out how to keep them as such, while also enabling them to become agile and innovative.

Culture change is always difficult, and the stronger the culture, the harder it is to remake it. As discussed in Paper 1, the U.S. financial regulatory bodies are mostly old organizations – three of the major agencies were founded in 1933, 1913, and 1863, respectively. These are venerable institutions with proud traditions, dedicated career staffs and, as described in Paper 4, extremely strong values and cultures.

To help them change for the digital age, the following steps will be needed.

***In considering this challenge, it is helpful to focus on the overarching goal: these shifts must help agencies speed up – move faster – without loss of quality in their work.***

Updated mission statements and strategic plans. The agencies should conduct strategic planning that deeply brainstorms how to meet these challenges. They should include technology industry experts in these conversations.

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<sup>54</sup> <https://www.mitre.org/publications/all/understanding-federally-funded-research-and-development-centers-ffrdcs>

<sup>55</sup> <https://www.icann.org/>

Recruiting and retraining. As discussed above, the agencies will have to recruit high-caliber technology and data science talent and also retrain all current staff.<sup>56</sup>

Generational change. The agencies can leverage the generational change discussed in paper 4. Millennials are the largest generation in world history, are approaching middle age, and are digitally-native. GenX is a smaller generational cohort than either the millennials or the baby boomers, sandwiched between the two. This may create agency capacity to promote young talent into positions of leadership on an accelerated basis. In addition, projects and initiatives aimed at technology change should be consciously designed to include younger personnel. Again, the key to agility is to mix people and break siloes, horizontally and vertically.

Focus on field examiners. A common pattern in regulatory change is that leaders in Washington adopt new policies and priorities, but that it takes several years for these to filter through to the field examiners who interface with the industry on a daily basis. Culture change must focus on accelerating this process.

Agile workflow. Regulators will need to adopt the “agile” methods of work that are ubiquitous in the software development world.<sup>57</sup> These replace traditional processes, often referred to as the “waterfall” approach. In the latter, people work on a project in a linear way, such as launching a product by having it start in market research and the move sequentially through stages – design, operations, and eventually to risk management and compliance. The flow can take weeks or months and collaborative interaction is often low.

In an agile environment, a complex project is broken into small tasks (often called stories). Teams are assembled with the needed range of skills to solve them, and the teams work intensively on each story, and then start another. It’s typical for each such project to last for a week. The process builds in continuous feedback and opportunity for self-correction, including use of retrospectives or “retros” at

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<sup>56</sup> My nonprofit, the Alliance for Innovative Regulation, will run a 2020 pilot project on offering a “Technology Boot Camp” for regulators, in San Francisco. It will teach basic tech curriculum and also include immersion experience with tech and fintech firms in the Bay Area.

<sup>57</sup> <https://www.smartsheet.com/understanding-agile-software-development-lifecycle-and-process-workflow>

each stage, with the team using a white board to capture what they think went well, what went badly, and needed actions to correct quickly for problems.

These modes of working are adaptable to any project and can massively accelerate progress.

Location and lifestyle. There is discussion at some U.S. agencies of expanding their west coast staffs in order to attract more tech talent and anchor certain innovation efforts. Of course, the innovation work needs to become integrated into, not segregated from, mainstream efforts, but such steps could help. Agencies can also consider adopting some of the “style” of tech firms to promote a workspace that helps attract high-tech talent.

Realistic standards. Policymakers should avoid the temptation to hold new technology to a yardstick that represents perfection. The current system is far from perfect, replete with mistakes, missing information, and sometimes bias. The goal should be to achieve enough improvement to justify the cost of switching.

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*Don't let the perfect be the enemy of the good...(T)ens or even hundreds of thousands of lives could be saved by self-driving cars, even if regulators allow less-than-perfect cars on the road. As (the RAND Corporation's David) Groves puts it, "Even though we can't predict the future, we found it's really hard to imagine a future where waiting for perfection doesn't lead to really big opportunity costs in terms of fatalities."*

Aarin Marshall, Wired Magazine 11/7/17  
RAND study on autonomous vehicle safety

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## **Conclusion**

Solon banned debt bondage in Athens before 600 BC. That ancient history serves as a reminder that people have always had money troubles, and that governments have been trying to address them for a long time. If it was easy, it would be done by now. No nirvana is available.

Still, today's technology revolution offers a historic chance to do vastly better by leveraging innovation – if, and only if, we get the regulation right.

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<sup>58</sup> <https://www.wired.com/story/self-driving-cars-rand-report/>

Amidst all this technology and regulatory upheaval, the affected industries will have to work their way toward new and better products, practices, cultures, and business models. These can, over time, produce a changed marketplace. Business models that today thrive amidst consumer confusion, product complexity, and non-transparent pricing, will be at risk of extinction. As products and pricing become easier to understand; as consumers access powerful tools for comparing products and providers and screening out harmful ones; as lower-income and minority consumers increasingly get access to fair and affordable products; as big data and artificial intelligence transform everything...as these shifts evolve, businesses will be able to – and even forced to – compete increasingly on winning and keeping the consumer’s trust.

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